U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Human Reliability Analysis (HRA)

Office of Nuclear Regulatory Research

What is HRA?

HRA supports probabilistic risk assessment (PRA) in the evaluation of risk. In nuclear facilities, the contribution to overall risk from human failures can be significant, so it is important to appropriately characterize the human failure events modeled in a PRA and assess the failure event probabilities.

In order to address the variety of HRA needs, the U.S. NRC's Office of Nuclear Regulatory Research has initiated a research program to the following:

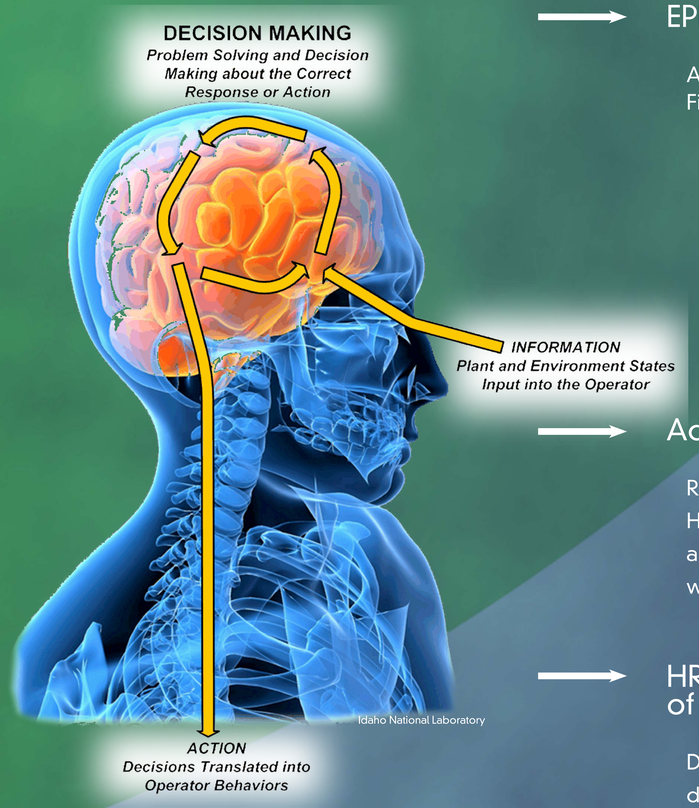
- Identify the types of human failures that must be addressed
- Develop tools for identifying human failures and quantify their probabilities
- Provide guidance in performing a quality HRA
- Develop guidance to address the variety of human performance issues that are represented in different types of PRA studies

Develop Empirical Basis to Improve HRA Methods Using Simulator Experiments

- Perform predictive analysis of crew performance using various methods
- Determine method and/or analyst capability to identify human failures, failure mechanisms, and underlying factors
- Develop insights for improving both the methods and method implementation
- Develop insights for improving HRA technology

Human Event Repository and Analysis

- Systematically collect human performance event data
- Develop human performance insights
- Improve HRA models on the basis of observed human performance events
- Improve qualitative HRA through the analysis of occurred failures and underlying failure drivers
- Develop formulas for estimating human error probabilities



EPRI/NRC – Fire HRA Guidelines

Address limitations of NUREG/CR-6850 with respect to Fire HRA by:

- Develop methodology for best-estimate Human Error Probability (HEP) quantification
- Develop approach to reflect fire-related factors that potentially affect operator performance in HRA quantification
- Provide guidance for implementation

Address HRA Model Differences

Respond to Commission direction to address the issue of HRA model differences and determine whether we can have a single model for the NRC to use or more than one with well-defined guidance on their use.

HRA-Informed Tools for Medical Applications of Byproduct Materials

Develop HRA-informed training and tools to support NRC decisions related to human errors made in medical applications of byproduct materials.

Knowledge for Today and Tomorrow